Petitia domingensis Jacq. Capá Blanco

Verbenaceae Verbena family

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Carlos D. Rodríguez

Petitia domingensis Jacq., or capá blanco, is a small to medium-sized evergreen tree (fig. 1). There are about 18 common names in its native range for this species (*3, 5, 7, 8, 13, 14, 16, 18, 19*). Its wood has an unusual but attractive appearance and is hard, strong, and heavy. Capá blanco is suitable for a wide range of uses including furniture, agricultural implements, and construction material.

HABITAT

Native Range

The natural range of capá blanco includes Cuba, the Cayman Islands, Hispaniola, Puerto Rico, the Bahamas, and Jamaica (fig. 2) (*1, 3, 5, 6, 8, 13, 14, 16, 18, 19, 21, 22*).

Capá blanco was reported during the last century from St. Croix, St. Thomas (*8*), and Barbados (*14*). In a recent survey, capá blanco was not recorded on these islands.[1] Capá blanco has been planted in southern Florida and cultivated elsewhere (*1, 7, 8*). It is common in secondary thickets, pastures, and woodland on limestone (*1*). In Cuba, capá blanco is scattered on the higher lands and in limestone and stony areas (*5, 16, 18*). In the Bahamas, it is found in pine-barrens, coppices, and scrublands (*16*). In Puerto Rico, it is found in woods, in thickets, in limestone regions, on hillsides, and at lower and middle elevations in moist life zones (*3, 5, 8, 13*).

Climate

Capá blanco grows in both tropical and subtropical climates (*4*). Mean annual precipitation in its native range varies from 750 to 2000 mm (*23*). The dry season in capá blanco's range is usually between December and April (*23*).

Mean annual temperatures in capá blanco's native habitat fall in the range of 24.5 to 27.5 °C (*23*). Frost does not occur in the species' native range.

Soils and Topography

Capá blanco grows well in a wide range of soils, including soils derived from limestone[2] (*1, 7, 17, 21*) and at lower and middle elevations in moist life zones in Puerto Rico (*3, 8, 13*). Capá blanco seems to be better adapted to porous soils and should not be considered for planting in heavy clays in high rainfall areas (*10*). In Cuba, on the Isla de Pinos, in Zapata, and in Cienfuegos, capá blanco grows on limestone rendzina and humic carbonate soils or shallow red ferrallitic soils, usually close to the coast, and in the serpentine area of Holguin in Oriente (*3*).

Associated Forest Cover

Capá blanco is a characteristic species of moist coastal forests in Puerto Rico (*8*). It grows in association with *Acrocomia media* O.F. Cook, *Andira inermis* (W. Wright) HBK., *Calophyllum calaba* L., *Citharexylum fruticosum* L., *Genipa americana* L., *Guettarda scabra* (L.) Vent., *Hernandia sonora*

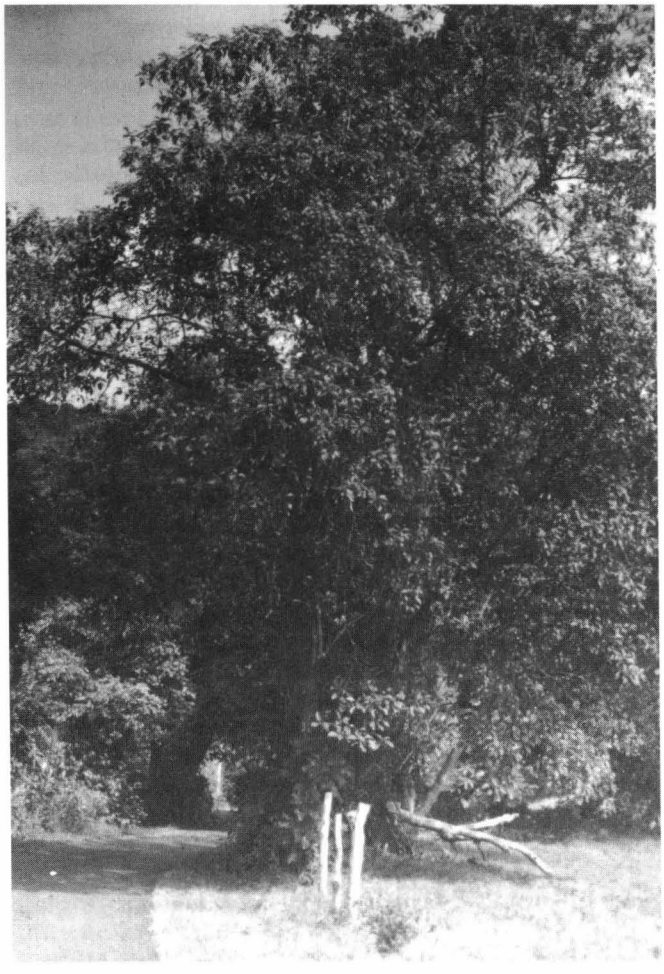

Figure 1.—*Capá blanco* (Petitia domingensis) *tree used as a boundary line in a rural area in Guajataca, Puerto Rico.*

[1]Proctor, George. 1992. Personal communication with the author. On file with: Department of Natural Resources, San Juan, PR.

[2]U.S. Department of Agriculture. [n.d.] Field notes. On file with: International Institute of Tropical Forestry, U.S. Department of Agriculture, Forest Service, Río Piedras, PR 00928-2500.

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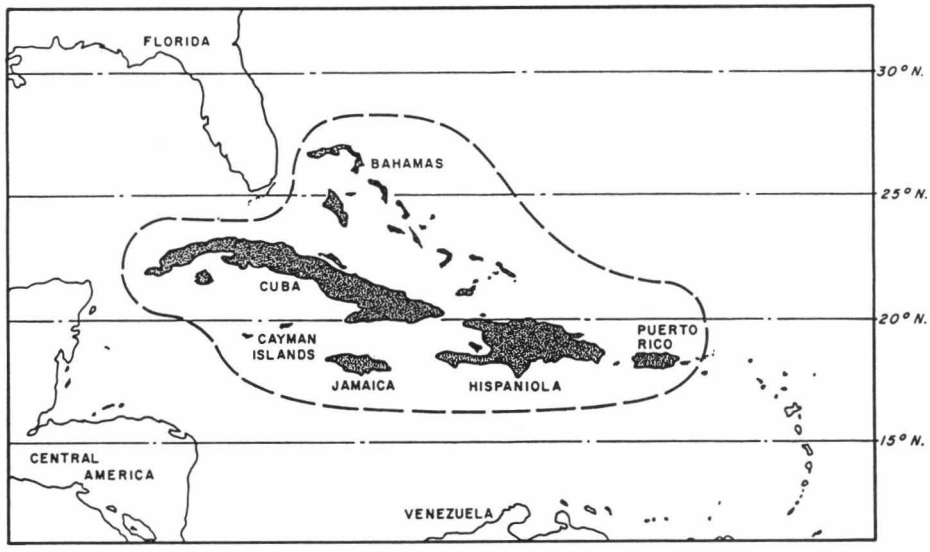

Figure 2.—*Native range of capá blanco* (Petitia domingensis) *represented by shaded area.*

L., *Hymenaea courbaril* L., *Mammea americana* L., *Manilcara bidentata* (A DC.) A. Chev., *Mastichodendron foetidissimum* (Jacq.) H.J. Lam, *Ocotea coriacea* (Sw.) Britton, *Psidium guajava* L., *Pterocarpus officinalis* Jacq., *Randia aculeata* L., *Tabebuia heterophylla* (DC.) Britton, and *Zanthoxylum martinicense* (Lam.) DC.

In lowlands and hills of western and central Cuba, capá blanco is found in association with *Adelia ricinella* L., *Allophylus cominia* (L.) Sw., *Amyris balsamifera* L., *A. elemifera* L., *Andira inermis* (W. Wright) DC., *Ateleia gummifera* var. *cubensis* (Griseb.) Mohlbr., *Ateramnus lucidus* (Sw.) Rothm., *Bursera simaruba* (L.) Sarg., *Canella winterana* (L.) Gaertn., *Casasia calophylla* A. Rich., *Casearia hirsuta* Sw., *Catalpa punctata* Griseb., *Cedrela odorata* L., *Cordia gerascanthus* L., *Diospyros crassinervis* (Krug & Urb.) Standl., *Eugenia maleolens* Pers., *E. rhombea* (Berg.) Krug & Urban, *E. axillaris* (Sw.) Willd., *Ficus crassinervia* Desf., *Krugiodendron ferreum* (Vahl.) Urban, *Mastichodendron foetidissimum* (Jacq.) H.J. Lam., *Pithecellobium cubense* Bisse, *Pricamnia pentandra* Sw., *Savia sessiliflora* (Sw.) Willd., *Tabebuia shaferi* Britton, *Trichilia hirta* L., *Urera baccifera* (L.) Weed., *Zanthoxylum elefantiasis* Macf., and *Zuelania guidonia* (Sw.) Britt. & Millsp. In the southern area of Isla de Pinos, in the Zapata peninsula, and adjacent southern coasts, it is found in association with *Acacia farnesiana* (L.) Wild., *Belairia ternata* Urb. & Griseb., *Bucida spinosa* (Northr.) Jennings, *Canella winterana* (L.) Gaertn, *Capparis* sp., *Chionanthus ligustrinus* (Sw.) Persoon, *Chrysobalanus icaco* L., *Elaeodendron attenuatum* A. Rich., *Erythroxylon* sp., *Gyminda latifolia* (Sw.) Urban, *Krugiodendron ferreum* (Vahl.) Urban, *Manilkara jaimiqui* (Wr. ex Griseb.) Dubard, *Metopium brownei* (Jacq.) Urban, *Nectandra coriacea* (Sw.) Griseb., *Peltophorum adnatum* Griseb., *Picrodendron macrocarpun* (A. Rich.) Britton, *Pithecellobium cubense* Bisse, *Pseudocarpium wrightii* Millsp., *Swietenia mahagoni* (L.) Jacq., and *Terminalia neglecta* Bisse.

In the lowland serpentine scrubs in Las Villas, capá blanco is found in the *Rondeletio-Guettardetum clarensis* association and at the Holguin area with the *Acacio belairioidi-Spirotecometum holguensis* association (*2*).

LIFE HISTORY

Reproduction and Early Growth

Flowering and Fruiting.—Flowers occur in lateral clusters (panicles) 3 to 15 cm long (fig. 3) and are hairy and slightly fragrant. The whitish corolla is tubular with four spreading lobes. The bell-shaped, four-toothed calyx is about 2 mm long. There are four tiny stamens borne near the mouth of the corolla. The pistil has a two-celled ovary, a slender style, and a two-lobed stigma (*1, 7, 8, 18, 19*). The fruit is a one-seeded drupe that is red when ripe (*1, 3, 7, 8, 18, 19*). Capá blanco flowers and produces fruit year round (*7, 8*).

Seed Production and Dissemination.—Capá blanco seeds are small, 4 mm long, and 4 to 5 mm in diameter (*1, 3, 7, 18, 19*). Average fresh weight is 0.18 g per seed and 0.02 g per seed or 50,000 seeds per kg when air-dried (author, personal observation).

Seedling Development.—Germination in capá blanco is hypogeous. Germination starts from 16 to 23 days after sowing, and germination rates for fresh seeds range from 14 to 60 percent[3] (author, personal observation; *11*). Results of a

[3]Francis, John; Rodríguez, Alberto. 1992. Personal communication with author. On file with: International Institute of Tropical Forestry, U.S. Department of Agriculture, Forest Service, Río Piedras, PR 00928-2500.

germination test of a small sample of 5-year-old seeds that failed to germinate suggest that capá blanco seeds do not retain their viability for long periods.[4]

Vegetative Reproduction.—Seedlings from 0.6 to 0.9 m and 1.2 to 1.8 m in height were cut back to 10, 30, and 60 cm to study their vegetative reproduction. The smallest seedlings cut to 10 cm had the highest survival rate. All the seedlings that sprouted had poor form.[5] Capá blanco coppices well when cut, as observed along rural roads in Puerto Rico (author, personal observation).

Sapling and Pole Stage to Maturity

Growth and Yield.—From 1929 to approximately 1941, capá blanco was extensively planted in several forests in Puerto Rico. Table 1 shows the different soil types among them. In 1945, 16 years after planting, trees in the Maricao forest averaged a diameter at breast height (d.b.h.) of 10.2 cm and a height of 5.5 m in the best area of the plantation. Growth was slow, and the trees had poor form.[6] In another planting in the same forest, survival was poor after 8 years. The tallest trees were about 1.8 m and very bushy in form.[7] Direct seeding was tried in the Susúa forest but it failed. At this site, even potted seedlings were generally unsuccessful. Average d.b.h. for a 7-year-old plantation was 11.5 cm and average height was 2.4 m tall (*12*).

Table 1.—*Forest soil types where capá blanco has been planted* (12)

Forest	Soil Type
Maricao	Poor lateritic clay over serpentine
Susúa	Poor lateritic clay over serpentine and shales
Guilarte	Heavy clays
Guajataca	Shallow clays over limestone
Río Abajo	Shallow clay soils over limestone
Luquillo Experimental Forest	Deep clay

At the Guilarte forest in Puerto Rico, d.b.h. and height growth for a 9-year-old plantation were 0.9 to 1.7 cm/yr and 0.7 to 1.1 m/yr, respectively (*12*).

In a 13-year-old plantation in the Guajataca forest of Puerto Rico, the average d.b.h. of dominant and codominant trees of capá blanco was 10.7 cm, with a mean annual diameter growth of 0.8 cm. Basal area was 6.8 m^2/ha, of which 5.7 m^2/ha was capá blanco. Five years later, basal area for the stand was 9.3 m^2/ha, of which 7.4 m^2/ha was capá blanco.[2] Fifty-four years after planting, dominant and codominant trees in the same forest had an average d.b.h. of 34.6 cm and an average height of 15.8 m. Basal area was 33.1 m^2/ha, of which 15.5 m^2/ha was capá blanco (author, personal observation).

At the Río Abajo forest in Puerto Rico, trees from one of the best stands had a mean annual diameter growth of 0.06 cm over a 7-year period. Average d.b.h. at 14 years was 18.1 cm. Basal area was 15.4 m^2/ha, of which 10.6 m^2/ha was capá blanco.[2] Data from four 10-m-radius plantation plots approximately 51 years old in the same forest revealed a mean total basal area of 27.9 m^2/ha, of which 19.6 m^2/ha was capá blanco. Average d.b.h. was 34.3 cm, and average height was 19.6 m (author, personal observation).

Two plots of capá blanco in the south side of the Luquillo Experimental Forest in Puerto Rico had a mean d.b.h. of 12.6 cm at 13 years. After 6 years of continued measurements, mean annual d.b.h. growth was only 0.006 cm/yr. Mean total

[4]Wadsworth, Frank H. 1944. Final report on germination of old seed of capá blanco. Mgmt. File 789. International Institute of Tropical Forestry, U.S. Department of Agriculture, Forest Service, Río Piedras, PR 00928-2500.

[5]Marrero, José. 1940. Material transferred to closed files. Mgmt. File 522. International Institute of Tropical Forestry, U.S. Department of Agriculture, Forest Service, Río Piedras, PR 00928-2500.

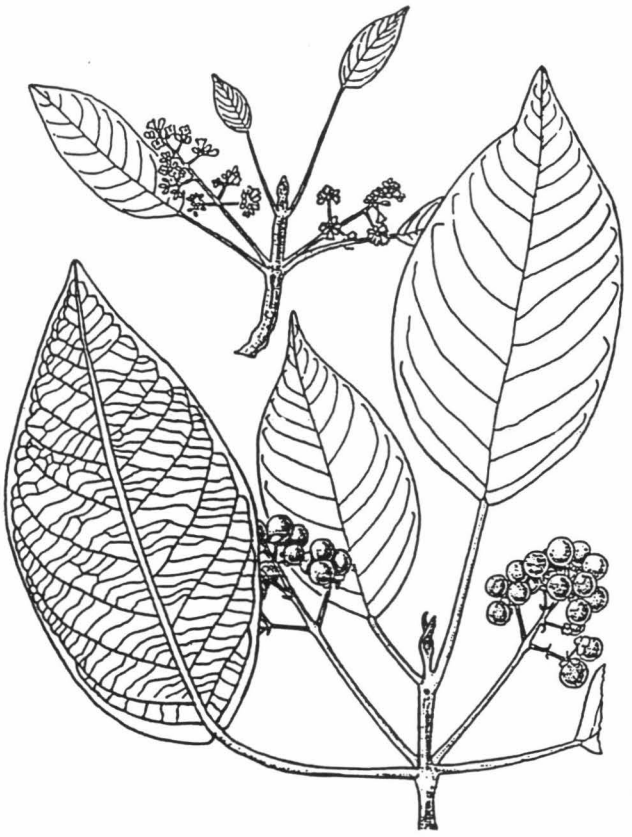

Figure 3.—*Capá blanco* (Petitia domingensis) *leaves, flowers, and fruits* (8).

[6]Wadsworth, Frank H. 1950. Final report on old Maricao plantation. Mgmt. File 0197 Mr. International Institute of Tropical Forestry, U.S. Department of Agriculture, Forest Service, Río Piedras, PR 00928-2500.

[7]Wadsworth, Frank H. 1945. Memorandum for record. Mgmt. File 0199 Mr. International Institute of Tropical Forestry, U.S. Department of Agriculture, Forest Service, Río Piedras, PR 00928-2500.

basal area in 1956 was 21.1 m^2/ha, of which 13.1 m^2/ha was capá blanco.[2] Although initial growth was rapid, capá blanco failed at this site.[8]

Seven small plantations were established on a hill behind the University of Puerto Rico, Cayey Campus. At 12 years of age, d.b.h.'s were between 7.6 and 10.2 cm, and trees were up to 6.1 m tall. Trees were thrifty but had wide crowns and multiple stems.[9] Data from two 53-year-old, 10-m-radius plots within the original plantation showed a mean total basal area of 39.6 m^2/ha, of which 13.1 m^2/ha was capá blanco. Mean d.b.h. was 20.7 cm, and mean height was 10.2 m. Average diameter growth in a 41-year period was 0.29 cm/yr (author, personal observation).

Fifty capá blanco trees were planted under a 4-year-old stand of *Casuarina equisetifolia* J.R. & G. Forst. at the St. Just forest in Puerto Rico.[10] One year later, 80 percent of the trees had survived and averaged 1.2 m in height. After 10 years, the survival rate was excellent. Average d.b.h. and height were 2.54 cm and 7.6 m, respectively.[2]

A few trees planted in 1967 and 1984 at the Fairchild Botanical Garden in south Florida, measured in 1992 before Hurricane Andrew, had an average d.b.h. and height of 6.1 cm and 3.5 m, respectively, for 25-year-old trees, and 2.8 cm and 2.5 m, respectively, for 8-year-old trees (author, personal observation).

A close spacing of 1.5 m should be used to avoid development of wide crowns when planting capá blanco.[11]

Rooting Habit.—Seedlings of capá blanco develop a woody taproot with numerous laterals (author, personal observation).

Reaction to Competition.—Capá blanco is intolerant of shade (*12*). Suppressed trees in the plantations are extremely slow growing. Capá blanco grown in mixed plantings generally has not been successful because it either dominates or becomes suppressed and stops growing (*12*).

Damaging Agents.—In Puerto Rican nurseries, capá blanco seedlings are severely damaged by *Pilocrocis secernalis* Möschler,[12] the capá leafwebber (*13*). This insect is a defoliator that also makes the seedlings more susceptible to other types of damage. Other insects that have been recorded damaging capá blanco trees are *Saissetia oleae* Olivier, infesting twigs and branches; *Nasutitermes costalis* Holmgren, tunneling on trunks; *Oiketicus kirbyi* Guilding, *Hyblaea puera* Cramer, and *Terastia meticulosalis* Guenée (caterpillars), feeding on the foliage; and *Microcentrum triangulatum* Brunner, also feeding on the foliage (*13*).

SPECIAL USES

Capá blanco's wood is hard, strong, and heavy (*3, 8, 9, 13, 14, 18, 19*) and has an unusual but attractive appearance (*9*). Its specific gravity ranges from 0.66 to 0.95 g/cm^3 (*5, 8, 9*). The wood is used for furniture, cabinetmaking, turned articles, novelty items, interior paneling, rollers for coffee-hulling mills, and for making carts, posts, poles, pilings, and props. Capá blanco's wood is also used for agricultural implements, such as handles, sporting goods, flooring, millwork, naval constructions, and crossties. It is suitable for all types of construction, including bridge materials and reinforced concrete work (*3, 5, 8, 9, 13, 14, 18, 19*). Capá blanco has been planted in rural areas of Puerto Rico as boundary lines (author, personal observation). Capá blanco's flowers are known to attract bees (*8*).

GENETICS

This genus consists of three species, two from the West Indies (*Petitia domingensis* Jacq. and *P. urbanii* Ekm.) and one from Mexico (*P. oleina* Benth.) (*15, 19, 20*).

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[9]Marrero, José. 1948. Mgmt. File 0198. International Institute of Tropical Forestry, U.S. Department of Agriculture, Forest Service, Río Piedras, PR 00928-2500.

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